Math 445/540 - Algebraic Topology | Spring 2014

Instructor

Professor Shelly Harvey
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Course Information

Class meets: MWF 2:00pm - 2:50pm in HB 453
Office Hours: Tues 1-2pm, Wed 4-5pm, Thurs 1-2pm
Webpage: http://math.rice.edu/~shelly/540s14/
All homework and reading assignments can be found on Owlspace
Teaching Assistant: Aru Ray

Textbook

James Munkres, Elements of Algebraic Topology, Perseus Books Publishing, Cambridge, Massachusetts, 1984. ISBN: 0-201-62728 (required)
This book will be available in the library on reserve.

Other useful textbooks

Allen Hatcher, Algebraic Topology; available free online at **http://www.math.cornell.edu/~hatcher/AT/ATpage.html**
M J Greenberg and J Harper, Algebraic Topology: a First Course (Benjamin/Cummings 1981)

Course Description

We will study the homology and cohomology of topological spaces. (Co)Homology is a way of associating a sequence of abelian groups to a topological space that are invariant under homeomorphism (and more generally homotopy equivalence). The homology groups of a space are in general easier to compute than the homotopy groups and hence they can be more useful in distinguishing some spaces. Some of the topics we will cover are simplicial and singular (co)homology, relative (co)homology, the Eilenberg-Steenrod axioms, the Universal Coefficient Theorem, some basic homological algebra, the cohomology ring, Poincare-Lefschetz duality, and the Kunneth Theorem. If time permits, we will cover some of the following topics: the Hurewicz and Whitehead's Theorems (statements only), De Rham cohomology, group cohomology, and Cech cohomology.

Grades

Your grade in the class will be based on the following weights:

Homework:	
Correctness	35%
Exposition	5%
Midterm:	25%
Final Exam:	35%

Homework and Exams

Homeworks will be assigned every Monday and will be due the following Monday in class (or before class) unless otherwise stated; they will be posted on **OWL-Space** (use your netid to log in). Homework solutions must be legible. You must show all of your work for full credit. Late homework will receive at most 1/2 credit. Your homework grade will consist of two scores: one for correctness and one for exposition. The students in Math 540 will be required to do more homework problems than the students in Math 445.

Exams

There will be one midterm (the date to be determined) and a final exam. Both exams will be take home exams. Good mathematical exposition will be counted on both exams.

Disability Support

Any student with a documented disability seeking academic adjustments or accommodations is requested to speak with me during the first two weeks of class. All discussions will remain as confidential as possible. Students with disabilities will also need to contact the Disability Support Services Office in the Ley Student Center.